

CLAIMS

What is claimed is:

1 1. A dynamic programmable logic array (DPLA) comprising:
2 at least one logic plane; and
3 at least one reprogrammable evaluate module within the at least one logic
4 plane, the at least one reprogrammable evaluate module including a first program input, a
5 second program input, a storage element coupled to the first and second program inputs, an
input pass transistor coupled to the output of storage element and an evaluate transistor coupled
to the input pass transistor, wherein the storage element comprises at least one of SRAM cell,
FLASH memory cell, fuse, anti-fuse, ferroelectric memory cell, EEPROM cell and EPROM
cell.

2 2. The DPLA of claim 1 wherein the at least one programmable evaluate module
includes the first program input, the second program input, and the storage element coupled to
the first and second program inputs, and the input pass transistor, the input pass transistor
including a gate, source and drain, wherein the gate is coupled to the output of the storage
element and the source and the drain are coupled to a control input and a gate of the evaluate
transistor.

1 3. The DPLA of claim 2 wherein the storage element comprises a multiple
2 transistor register.

1 4. The DPLA of claim 3 wherein the multiple transistor register comprises:
2 a program data pass transistor, which includes a gate source and drain, the source of the
3 program data pass transistor is coupled to the first program input and the gate is coupled to the
4 second program input;
5 a first inverter whose input is coupled to the drain of the program data pass transistor
6 and whose output is coupled to the output of the storage element; and
7 a second inverter whose input is coupled to the output of the first inverter and whose
8 output is coupled to the input of the first inverter, wherein the storage element is written by
9 placing a desired value on the first program input and asserting the second program input.

10 5. The DPLA of claim 2 which includes an evaluate disable transistor which
11 includes a gate, source and drain, the gate is coupled to the output of the storage element, the
12 source is coupled to the gate of the evaluate transistor, and the drain is coupled to the ground;
13 and the output of the storage element turns on one of the input pass transistor or the evaluate
14 disable transistor at any given time.

15 6. The DPLA of claim 2 in which the control input and one of the first and second
16 program inputs are combined into one signal.

17 7. The DPLA of claim 5 in which the control input and one of the first and second
18 program inputs are combined into one signal.

19 8. A dynamic programmable logic array (DPLA) comprising:

2 a first logic plane;
3 a first reprogrammable evaluate module within the first logic plane;
4 a second logic plane coupled to the first logic plane and for providing an
5 output; and
6 a second reprogrammable evaluate module within the second logic plane,
7 wherein the storage element of the first and second reprogrammable evaluate modules
8 comprises at least one of SRAM cell, FLASH memory cell, fuse, anti-fuse, ferroelectric
9 memory cell, EEPROM cell and EPROM cell.

10 9. The DPLA of claim 8 in which each of the first and second reprogrammable
11 evaluate modules includes a first program input, a second program input, a storage element
12 coupled to the first and second program inputs, and an input pass transistor, the input pass
13 transistor including a gate source, and drain, wherein the gate is coupled to the output of the
14 storage element and the source and the drain are coupled to a control input and a gate of an
15 evaluate transistor.

1 10. The DPLA of claim 8 wherein the first logic plane comprises an AND logic
2 plane.

1 11. The DPLA of claim 8 wherein the second logic plane comprises an OR logic
2 plane.

1 12. The DPLA of claim 10 wherein the second logic plane comprises an OR logic

plane.

13. The DPLA of claim 9 wherein the storage element of the first and second reprogrammable evaluate modules comprises a multiple transistor register.

14. A reprogrammable evaluate module for use in a logic array comprising:
a first program input;
a second program input;
a storage element coupled to the first and second program inputs;
an input pass transistor coupled to the output of storage element; and
an evaluate transistor coupled to the input pass transistor.

15. The module of claim 14 wherein the input pass transistor includes a gate, source and drain, wherein the gate is coupled to the output of the storage element and the source and the drain are coupled to a control input and the gate of the evaluate transistor.

16. The module of claim 15 wherein the storage element comprises a multiple transistor register.

17. The module of claim 16 wherein the multiple transistor register comprises:
a program data pass transistor, which includes a gate, source and drain, the source of the program data pass transistor is coupled to the first program input and the gate is coupled to the second program input;

5 a first inverter whose input is coupled to the drain of the program data pass transistor
6 and whose output is coupled to the output of the storage element; and

7 a second inverter whose input is coupled to the output of the first inverter and whose
8 output is coupled to the input of the first inverter, wherein the storage element is written by
9 placing a desired value on one of the first and second program inputs and asserting a signal at
10 the other of the first and second program inputs.

1 18. The module of claim 15 which includes an evaluate disable transistor which
2 includes a gate, source and drain, the gate is coupled to the output of the storage element, the
3 source is coupled to the gate of the evaluate transistor, and the drain is coupled to the ground;
4 and the output of the storage element turns on one of the input pass transistor or the evaluate
5 disable transistor at any given time.

6 19. The module of claim 15 in which the control input and one of the first and
7 second program inputs are combined into one signal.

1 20. The module of claim 18 in which the control input and one of the first and
2 second program inputs are combined into one signal.